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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,421	12/03/2003	Tsuyoshi Onuma	117940	4772

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EXAMINER

RICKMAN, HOLLY C

ART UNIT PAPER NUMBER

1773

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,421

Applicant(s)

ONUMA ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The rejection of claim 11 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maesaka et al. (US 6596418) in view of Kubota et al. (US 2002/0058159).

Maesaka et al. teach a magnetic recording medium having a substrate, a soft magnetic layer, a PtBO base layer (corresponds to claimed "seed" layer), and an artificial lattice formed from alternating layers of CoBO and PtBO. The reference teaches that the Co alloy and Pd alloy layers are 0.4 nm and 0.6 nm thick, respectively (col. 3, lines 25-32). The reference teaches that the amount of B in the artificial lattice is 15 at.% at the maximum (col. 3, lines 50-52). The reference teaches that the B content in the seed or base layer is preferably 30 at% at the maximum (col. 4, lines 34-36). The base layer is as thin as 1 nm (col. 5, lines 42-44). Maesaka

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et al. also teach the use of the magnetic recording medium coupled with a magnetoresistive head to form a recording apparatus (col. 6, lines 21-30).

Maesaka et al. teaches the use of several different materials for the soft magnetic layer (i.e., NiFe, CoZr, FeN, NiFeTa, “and the like” – see col. 5, lines 51-53). The reference is silent with respect to the use of a soft magnetic layer containing B and at least one of Ni, Fe, and Co.

Kubota et al. disclose a magnetic recording medium having a soft magnetic underlayer and an artificial lattice recording structure thereon with an intermediate layer in between. The reference teaches that it is known in the art to use soft magnetic materials such as NiFe, CoZrNb and FeAlN. However, the reference teaches that these materials increase medium noise. In order to address this problem, Kubota et al. propose the use of a FeCoB alloy containing 10 at% boron (see paragraphs 4-5, 11-12 and 32).

It would have been obvious to one of ordinary skill in the art to substitute FeCoB₁₀ for the NiFe soft magnetic material taught by Maesaka et al. in order to reduce medium noise as suggested by Kubota et al.

With respect to claim 12, it is noted that Maesaka teaches a preferred value of 30 at% for the B concentration of the seed layer taught therein. However, there does not appear to be any distinction in the properties of the prior art and claimed articles. The numbers are so close, they appear to overlap. In any event these values would be minor obvious variations and expected to have the same properties. *See Titanium Metals Corporation vs Banner*, 778 F. d. 775, 227 USPQ 773 (Fed. Cir. 1985).

Response to Arguments

4. Applicant's arguments filed 10/28/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that neither Kubota nor Maesaka teach or suggest a motivation to use B in both a soft magnetic layer and a seed layer as claimed, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). While Kubota does not suggest a motivation to use B in **both** a soft magnetic layer and a seed layer, the reference does recognize an advantage associated with using an FeCo soft magnetic layer containing B. Thus, motivation to use FeCoB in place of the soft magnetic layer taught by the primary reference to Maesaka is found in the prior art.

One of ordinary skill in the art would have had a reasonable expectation of success in using the soft magnetic underlayer taught by Kubota in the structure taught by Maesaka because the advantages associated with the use of an FeCoB soft magnetic layer are not limited to the

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specific recording medium structure disclosed by Kubota. Instead, Kubota recognizes that the “[a]ddition of...boron...maintains the SUL layer in amorphous or nano-crystalline state to provide extremely smooth surface and high magnetization, *which are also the basic requirements for making hard disc drive medium*” (emphasis added). Thus, the advantages achieved by using a FeCoB soft magnetic layer are clearly not limited to the recording medium taught by Kubota.

The data set forth in the specification, particularly in Table 1, has been reviewed for evidence of unexpected results associated with the claimed structure. However, the evidence set forth in Table 1 is not sufficient to establish the presence of unexpected results associated with the use of a soft magnetic layer and seed layer containing B as claimed. The inventive and comparative examples essentially vary two parameters: the presence of B in one or both of these soft magnetic/seed layers and the B concentration in the seed layer. The comparative example 1 has a lower B concentration in the seed layer than any of the inventive examples. Thus, the effects of concentration cannot be separated from the effects of using B in both the seedlayer and in the soft magnetic layer and a direct comparison between inventive and comparative examples cannot be made.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after ..


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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Holly Rickman
Primary Examiner
Art Unit 1773

March 29, 2005